This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (original) A copper diffusion barrier film for use in a semiconductor device, the copper diffusion barrier film formed of a silicon-based material doped with boron, wherein the copper diffusion barrier film maintains a stable dielectric constant of less than 4.5 in the presence of atmospheric moisture.

2. (original) The copper diffusion barrier of claim 1, wherein the copper diffusion barrier film maintains a stable dielectric constant of between 3.0 and 4.5 in the presence of atmospheric moisture.

3. (original) The copper diffusion barrier of claim 1, wherein the silicon-based material comprises silicon nitride.

4. (original) The copper diffusion barrier of claim 1, wherein the silicon-based material comprises silicon carbide.

5. (original) The copper diffusion barrier film of claim 1, further comprising:

a first layer of boron-doped silicon nitride; and

a second boron-doped layer comprising silicon and one or more elements selected from the group consisting of carbon, nitrogen and oxygen.

6. (original) The copper diffusion barrier film of claim 1, further comprising:

a first layer of boron-doped silicon carbide; and

a second boron-doped layer comprising silicon and one or more elements selected from the list of elements consisting of carbon, nitrogen and oxygen.

7. (original) The copper diffusion barrier film of claim 1, wherein the copper diffusion barrier has a thickness in the range of 100 Å to 1500 Å.

8. (currently amended) A partially fabricated semiconductor device, comprising:

a metal interconnect formed substantially of copper; and

a copper diffusion barrier adjacent the metal interconnect, the copper diffusion barrier formed of a silicon-based material doped with boron, wherein the copper diffusion barrier has a thickness in the range of 100 Å to 1500 Å.

9. (original) The device of claim 8, wherein the copper diffusion barrier maintains a stable dielectric constant of between 3.0 and 4.5 in the presence of atmospheric moisture.

10. (original) The device of claim 8, wherein the silicon-based material comprises a compound selected from the list comprising silicon nitride and silicon carbide.

11. (original) The device of claim 8, wherein the copper diffusion barrier further comprises:

a first layer of boron-doped silicon nitride; and

a second boron-doped layer comprising silicon and one or more elements selected from the list of elements consisting of carbon, nitrogen and oxygen.

12. (original) The device of claim 8, wherein the copper diffusion barrier further comprises:

a first layer of boron-doped silicon carbide; and

a second boron-doped layer comprising silicon and one or more elements selected from the list of elements consisting of carbon, nitrogen and oxygen.

13. (canceled)

14. (original) The device of claim 1, wherein the copper diffusion barrier has a composition in the following ranges: $Si_{0.1-0.3}B_{0.2-0.6}N_{0.1-0.5}$.

15. (original) The device of claim 1, wherein the copper diffusion barrier has a composition of $Si_1B_2N_1$.

16. (original) The device of claim 1, wherein the copper diffusion barrier has a composition of $Si_1B_3N_1$.

17. (original) A copper diffusion barrier film for use in a semiconductor device, the copper diffusion barrier film comprising:

a first layer of boron nitride or silicon boron nitride ; and

a second layer comprising boron and one or more elements selected from the list of elements consisting of silicon, carbon, nitrogen and oxygen, wherein the copper diffusion barrier film maintains a stable dielectric constant of less than 4.5 in the presence of atmospheric moisture.

18 through 31. (canceled)